

TECHNICAL INFORMATION

PAN 400

A HIGH SPEED BLACK AND WHITE CAMERA FILM

ILFORD PAN 400 is a high speed black and white camera film which is suitable for all aspects of general purpose photography and is capable of generating sharp, fine grain, high quality images. It is particularly suitable for working with action shoots and available light situations.

ILFORD PAN 400 35mm film is coated on 0.125mm/5-mil acetate base and is available in 135/36 exposure cassettes, or in bulk lengths of 30.5 metres (100ft). ILFORD PAN 400 135 film is supplied in DX coded cassettes, suitable for all 35mm cameras.

EXPOSURE RATING

ILFORD PAN 400 has a speed rating of ISO 400/27° to daylight. The ISO speed rating was measured using ILFORD ID-11 developer at 20°C/68°F with intermittent agitation in a spiral tank.

FILTER FACTORS

ILFORD PAN 400 film may be used with all types of filters (e.g. colour, polarising and neutral density filters) in the usual way. Follow the instructions given by the filter manufacturer.

The exposure increase in daylight may vary with the angle of the sun and the time of day. In the late afternoon or the winter months, when daylight contains more red light, green and blue filters may need slightly more exposure than usual.

Cameras with through-the-lens metering will usually adjust the exposure automatically when using filters. With some automatic exposure cameras, the correction given for deep red and orange filters can produce negatives under exposed by as much as 1½ stops.

MAKING LONG EXPOSURES

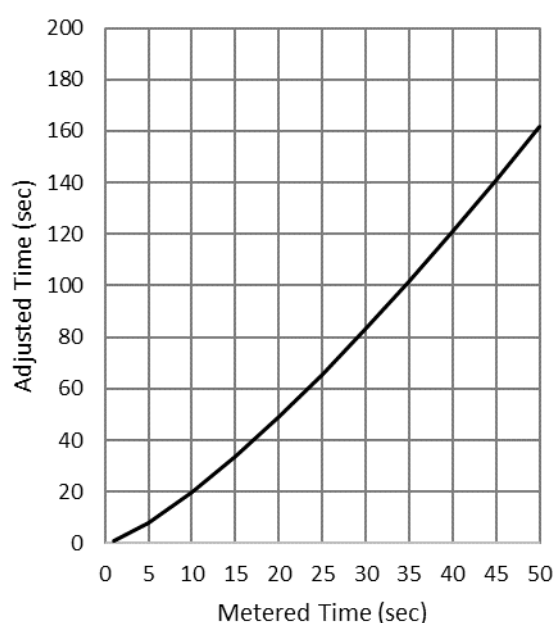
For exposures between 1 and 1/10 000 second, no adjustments are needed for reciprocity law failure.

When exposures longer than 1 second are given, ILFORD PAN 400, along with other films, needs to be given more exposure than indicated by a meter. Use the graph to calculate the increased exposure time which should be given once the metered time is known.

The graph is based on the formulae $T_a = T_m^{1.30}$

T_a = Adjusted Time

T_m = Metered Time



DEVELOPMENT TIMES (MIN:SEC)

The table below gives development times for both manual and machine processing ILFORD PAN 400. These times will produce negatives of average contrast suitable for printing in all enlargers. The development times are intended as a guide and may be altered if a different result is needed.

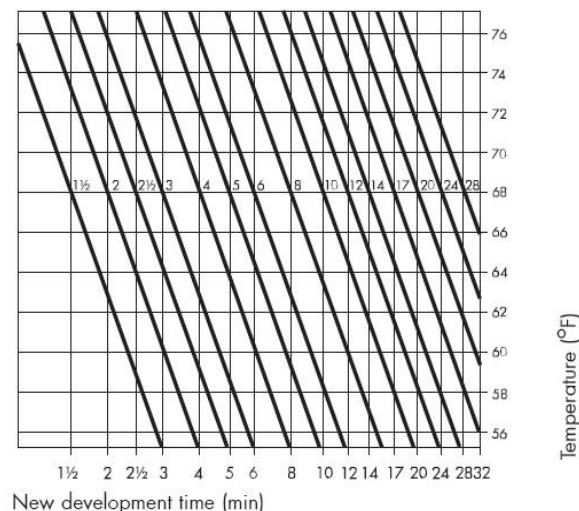
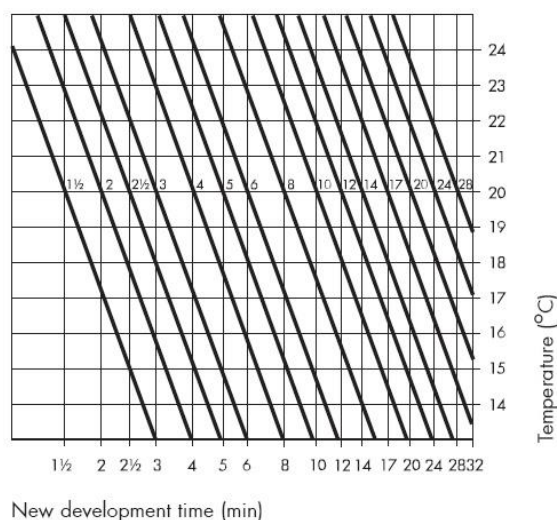
For manual processing in spiral tanks and deep tanks, the development times are based on intermittent agitation. Where continuous agitation is used for manual processing (as in a dish/tray or with some types of developing tank), reduce these times by up to 15%. For use in rotary processors without a pre-rinse, reduce the spiral tank development times by up to 15%. A pre-rinse is not recommended as it can lead to uneven processing.

| ILFORD developer | Dilution | Meter setting (EI) | | |
|---|----------|--------------------|--------|--------|
| | | 200/24 | 400/27 | 800/30 |
| Spiral tank, deep tank, dip and dunk machines (min:sec @ 20°C/68°F) | | | | |
| ILFOTEC DD-X | 1+4 | 7:00 | 8:00 | 9:00 |
| ILFOSOL 3 | 1+9 | 5:30 | 7:00 | 12:30 |
| | 1+14 | 7:30 | 10:30 | 18:30 |
| ILFOTEC HC | 1+15 | - | 3:00 | 5:00 |
| | 1+31 | 5:00 | 6:00 | 9:00 |
| ILFOTEC LC29 | 1+9 | - | 3:00 | 5:00 |
| | 1+19 | 5:00 | 6:00 | 9:00 |
| | 1+29 | 7:00 | 9:00 | - |
| ID-11 | stock | 6:00 | 7:00 | 10:00 |
| | 1+1 | 12:00 | 13:00 | 16:00 |
| | 1+3 | 23:00 | 20:00 | - |
| MICROPHEN | stock | - | 6:00 | 7:00 |
| | 1+1 | - | 12:00 | 13:00 |
| | 1+3 | - | 23:00 | 24:00 |
| PERCEPTOL | stock | 10:00 | 11:00 | - |
| | 1+1 | 14:00 | 16:00 | - |
| | 1+3 | 22:00 | - | - |
| Non-ILFORD Developers (20°C/68°F) | | | | |
| Kodak D-76 | Stock | 6:00 | 7:00 | 10:00 |
| | 1+1 | 12:00 | 13:00 | 16:00 |
| | 1+3 | 23:00 | 20:00 | - |
| Dip and dunk machines (24°C/75°F) | | | | |
| ILFOTEC DD | 1+4 | 5:00 | 6:00 | 8:00 |
| ILFOLAB FP40, roller transport and short leader machines (26°C/79°F) | | | | |
| ILFOTEC RT RAPID | 1+1+2 | 0:55 | 1:00 | 1:15 |
| | 1+1+5 | 1:05 | 1:10 | 1:35 |

Note. Development times may need adjusting to suit individual processing systems and working practices. If an established system is producing good results, adjust the recommended development times until the desired contrast level is obtained. Development times for some other manufacturers' developers are included for your convenience and are only a general guide. Other manufacturers can and do change their product specifications from time to time, and the development times may change as a result.

Processing at Different Temperatures

ILFORD PAN 400 film can be processed over a range of temperatures. Development times at temperatures other than 20°C/68°F may be calculated from the charts below. For example, if 4 minutes at 20°C/68°F is recommended, the time at 23°C/73°F will be 3 min and the time at 16°C/61°F will be 6 min.



PROCESSING

ILFORD PAN 400 can be processed in all types of processing equipment including spiral tanks, rotary processors, dishes/trays, deep tanks and automatic processors. Standard capacity figures and replenishment rates can be maintained. ILFORD PAN 400 is very robust in processing and will tolerate less than ideal processing conditions. Also, it will not contaminate the processing chemicals.

Safelight recommendations

Handle ILFORD PAN 400 film in total darkness.

Agitation

Intermittent agitation is recommended for use in spiral tanks and deep tanks. With spiral tanks, invert the tank four times during the first 10 seconds, then invert the tank four times again during the first 10 seconds of each further minute. Otherwise, follow the recommendations given by the processing equipment manufacturer.

Stop, fix, wash and rinse

For best results it is recommended that all process solutions are kept at the same temperature or at least within 5°C (9°F) of the developer temperature.

Stop Bath

After development the film can be rinsed in water, but we recommend that an acid stop bath is used such as ILFORD ILFOSTOP (with indicator dye). ILFOSTOP is also recommended for all machine processing applications. When tanks or dishes (trays) of process solutions are in use a stop bath immediately stops development and reduces carry over of excess developer into the fixer bath. This helps to maintain the activity and prolong the life of the fixer solution.

ILFORD ILFOSTOP

| | |
|---|-------------------|
| Dilution | 1+19 |
| Temperature Range | 18–24°C (64–75°F) |
| Time (sec) at 20°C (68°F) | 10-30 |
| Capacity (films per litre, unrefurnished) | 15x (135-36) |

Fix

The recommended fixers are ILFORD RAPID FIXER or ILFORD HYPAM FIXER.

Wash

Wash the films in running water for 5–10 minutes at a temperature within 5°C (9°F) of the process temperature. Or see note below for greater economy when using spiral tanks.

ILFORD RAPID OR HYPAM FIXERS

| | |
|--|-------------------|
| Dilution | 1+4 |
| Temperature Range | 18–24°C (64–75°F) |
| Time (mins) at 20°C (68°F) | 2-5 |
| Capacity (films per litre, unrefilled) | 24x (135-36) |

Note: For spiral tank use, the following method of washing is recommended. This method of washing is faster, uses less water yet still gives negatives suitable for long term storage.

After fixing, fill the spiral tank with water at the same temperature, $\pm 5^{\circ}\text{C}$ (9°F), as the processing solutions and invert it five times. Drain the water away and refill. Invert the tank ten times. Once more drain the water away and refill. Finally, invert the tank twenty times and drain the water away.

Rinse

For a final rinse use ILFORD ILFOTOL wetting agent added to water, it helps the film to dry rapidly and evenly. Start by using 5ml per litre of rinse water (1+200), however the amount of ILFOTOL used may need some adjustment depending on the local water quality and drying method. Too little or too much wetting agent can lead to uneven drying. Remove excess rinse solution from the film before drying.

Drying

To avoid drying marks, use a clean squeegee or chamois cloth to wipe ILFORD PAN 400 film before hanging it to dry. Dry ILFORD PAN 400 at 30–40°C/86–104°F in a drying cabinet or at room temperature in a clean dust-free area.

STORAGE

For immediate use, store ILFORD PAN 400 in a cool (10–20°C/50–68°F), dry place in its original packaging. ILFORD PAN 400 may be stored in a fridge/freezer but allow plenty of time for the film to acclimatise prior to use.

Exposed film

Once exposed, process ILFORD PAN 400 as soon as practical.

Exposed films should always be stored in cool, dry conditions - as recommended above.

Negatives

Store processed negatives in a cool (10–20°C/50–68°F), dry place, in the dark. Suitable storage sleeves include those made of cellulose triacetate, Mylar, paper (pH6.5–7.5) or inert polyester.

A wide range of fact sheets are available which describe and give guidance on using our products. Some products in this fact sheet might not be available in your country.

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